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Subject: Round 3B Fish Compositing
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EPA has reviewed the proposed fish sample compositing approaches. These are summarized below:

Crayfish: EPA provided comments on this previously; the approach proposed by the LWG is acceptable.

Sculpin: In general, the approach proposed by the LWG is acceptable. However, EPA recommends the exclusion of 1 - 2 fish for three of the composites due to substantial differences in size range:

- SP10E: Sample SP10E-06 should be excluded. This fish weighs 143.7 g and is significantly larger than the other fish in the composite. This will reduce the total sample mass to 312.6 g.
- SP10W: Sample SP10W-06 should be excluded. This fish weighs 146.4 g and is significantly larger than the other fish in the composite. This will reduce the total sample mass to 251.3 g.
- SP12E: The largest (SP12E-01) and the smallest (SP12E-12) fish in the composite should be excluded. These are significantly larger and smaller than the remaining fish in the composite. This will reduce the total sample mass to 193.7 g. EPA understands that this still meets our target tissue mass (175 g) since we are not doing PBDEs on sculpin.

Smallmouth Bass: EPA reviewed the approach developed by the LWG previously. Comments were submitted to the LWG in an email dated October 15, 2007. The LWG responded to EPA's counter proposal in an email from Laura Kennedy dated October 25, 2007. A summary of EPA's response to the three key points in Laura's email is provided below:

- 1) EPA acknowledges that the size range proposed by EPA is not consistent with the FSP which specified a size range of 225 to 355 mm and that larger fish would be included if insufficient numbers of fish within the target range were collected. However, EPA believes that it under estimated the size of the fish that could be expected to be caught during the sampling effort and which are allowed to caught according to ODFW fishing regulations (e.g., 3 fish per day larger than 15 inches).
- 2) EPA disagrees that including a few fish larger than 355 mm will result in a exposure concentration that is inconsistent with the arithmetic average that human consumers of bass will be exposed to. All the fish are within the allowable size range according to State of Oregon fishing regulations. Although smaller fish were caught during the Round 3B sampling effort, EPA believes that fishers will preferentially keep larger fish and, as a result, it is appropriate to include fish larger than 355 mm in the composite since many fish above this length were taken during the collection effort.
- 3) EPA agrees that, consistent with RAGS Part A, it is the combination of intake variable values that should result in an estimate of the reasonable maximum exposure, not the use of the maximum value for each of the individual intake variables for the human health risk assessment. However, the bass will be evaluated in the ecological risk assessment as well. The ecological risk assessment is not

bound by the narrowness of the length range as is the human health risk assessment. Furthermore, the ecological risk assessment is designed to evaluate risks to the maximally exposed receptor, which for bass is likely the largest, oldest fish we can collect. The food web model is best at predicting average tissue concentrations in fish. The best empirical data for calibrating and validating the food web model to estimate the average chemical concentration is a range of sizes, including larger fish. EPA recognizes that the multiple objectives of the Round 3B fish sampling makes it difficult to develop one approach that will optimize all objectives. Consequently, EPA recommends a focused conversation to discuss the LWG and EPA proposal with the goal of including some fish larger than 355 mm while at the same time attempting to maintain the 0.75 ratio requirement.

Carp: The LWG proposal for RM 0 - 4 and RM 4 - 8 are acceptable. However, regarding the carp collected between RM 8 - 12, EPA believes that the carp collected from Swan Island Lagoon should be composited as a separate sample. This will facilitate the foodweb model looking at Swan Island Lagoon as a subset of the site. Furthermore, previous research on carp movements have found that they can exhibit both high site fidelity and high mobility (Penne and Pierce 2007). EPA proposes compositing the carp collected between RM 8 and 12 according to the following:

- Composite 1: CP0812-9, CP0812-8, CP0812-4, CP0812-6 and CP0812-2 - average fish length = 594.2 mm.
- Composite 2: CP0812-10, CP0812-3, CP0812-7, CP0812-1 and CP0812-5 - average fish length = 597.6 mm.
- Composite 3 (all from SIL): CP0812-15, CP0812-13, CP0812-11, CP0812-12 and CP0812-14 - average fish length = 530.4 mm.

This will result in a good distribution of carp from the main stem with respect to capture location and size range and similar average length. This approach does result in a data set whereby the mainstem lengths are different from the SIL lengths. However, under the LWG proposal, the RM 8 - 12 composites, with average lengths ranging from 571.6 - 577.4 mm, are different than the other composites.

Please let me know if you have any questions or comments on this approach.

Thanks, Eric